Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

***NATIONAL WEATHER SERVICE INSTRUCTION 10-803***
***JANUARY 1, 2004***

***Operations and Services***
***Aviation Weather Services, NWSPD 10-8***

# *SUPPORT TO AIR TRAFFIC CONTROL FACILITIES*

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**NOTICE:** This publication is available at: http://www.nws.noaa.gov/directives/.

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**OPR:** OS23 (K. Schlachter) **Certified by:** OS23 (M. Andrews)
**Type of Issuance:** Routine

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***SUMMARY OF REVISIONS:*** Supersedes National Weather Service Instruction 10-803, Support to Air Traffic Control Facilities, dated December 24, 2002. Summary of changes include: Eliminating last sentence of the last paragraph of section 7.2, which caused confusion on how date/time groups were used in CWSU products; added clarification at bottom of page 12, subsection four (4), on numbering sequence when canceling Center Weather Advisory (CWA); corrected Meteorological Impact Statement examples in Appendix D and CWA examples in Appendix E.

SIGNED 12/17/03
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Director, Office of Climate, Water and Weather Services

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**1. Purpose.** This directive provides general procedures for National Weather Service (NWS) meteorological support to Federal Aviation Administration (FAA) Air Traffic Facilities. Specific guidelines are provided for NWS participation in jointly (FAA/NWS) operated weather service facilities.

**2. General.** NWS support is designed to improve aviation safety and enhance efficient flow of air traffic by forecasting and monitoring adverse weather. Efficiency is effected by maintaining close coordination with traffic managers whose decisions affect the flow of air traffic through the National Airspace System (NAS).

**3. Background.** Center Weather Service Units (CWSU) are joint FAA/NWS meteorological support units composed of NWS meteorologists and FAA Traffic Management Unit (TMU) specialists directly supporting the FAA's 21 Air Route Traffic Control Centers (ARTCC). They serve the NAS directly, providing information critical to the safe and efficient flow of air traffic. NWS personnel work as a team with FAA Air Traffic Control (ATC) specialists assigned to the TMU. These TMU specialists are the designated interface between CWSU meteorologists and ARTCC controllers, FAA facilities within the ARTCC area of responsibility, and users to whom CWSU products are disseminated. CWSU forecasters provide meteorological consultation, forecasts, and advice to ARTCC managers, staff, and other supported FAA facilities and activities, regarding weather impact on their missions, equipment outages and repairs, and FAA staffing. Additionally, the CWSU provides advisories of hazardous weather conditions for airborne aircraft. These advisories are disseminated through NWS and FAA communications systems and are available to both internal FAA and external aviation users.

Weather support is accomplished through various products and verbal briefings describing weather conditions (forecasts or observations) which may affect air traffic flow or operational safety in the ARTCC's portion of the NAS (the CWSU area of responsibility), and in other locally defined, special operations areas (e.g., offshore helicopter operations areas). The CWSU meteorologists must remain cognizant of FAA requirements and procedures to adequately perform these tasks. Products generated for local dissemination and use describing conditions outside the CWSU's area of responsibility may be prepared if, in the meteorologist's judgment, sufficient information and resources are available. However, meteorologists will first contact the CWSU responsible for the area in question in order to ensure spatial consistency of products.

The CWSU is the liaison between FAA facilities and other NWS offices in its area, and they provide meteorological training for ARTCC personnel. CWSU meteorologists may assist in the distribution of weather forecasts, advisories, and warnings issued by other NWS offices. CWSU meteorologists usually staff two shifts a day. Appendix A identifies the NWS support office for each CWSU.

**4. Air Traffic Meteorological Concerns.** Weather adversely impacting aviation operations often increases demands on FAA Air Traffic resources facilitating safe and efficient use of airspace and airports. FAA personnel need the best weather information available to enhance their mission of supporting aviation operations. Required weather information includes, but is not limited to, the following:

a. Convective weather including thunderstorm timing, tops, movement, intensity, and character such as broken and solid lines or large clusters

b. Operationally significant ceilings/visibility

c. Cloud tops

d. Winds and temperatures, surface and aloft

e. Wind shear

f. Operationally significant pressure changes

g. Precipitation

h. Turbulence

i. Icing

j. Volcanic ash

The specific operational situation dictates the significance of any particular aviation weather phenomenon.

**5. Supported Air Traffic Facilities.**

a. ARTCC. ARTCCs provide ATC service to aircraft operating on Instrument Flight Rules (IFR) flight plans within controlled airspace, principally during the en route phase of flight. When equipment capabilities and controller work load permit, certain advisory and assistance services may also be provided to Visual Flight Rules (VFR) aircraft.

The Air Traffic Manager (ATM), or designee, of each ARTCC has operational responsibility for the co-located CWSU. The ATM, or designee, oversees CWSU operations and brings any special local weather support requirements to the attention of the CWSU Meteorologist In Charge (MIC).

b. TMU. The TMU in an ARTCC is responsible for the management of facility air traffic. The TMU is usually under the direct supervision of an assistant manager for traffic management.

c. Airport Traffic Control Tower (ATCT). The ATCT is an airport terminal facility which uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating at/in the vicinity of an airport. The ATCT authorizes aircraft to land or take off at the airport it controls or to transit the associated airspace regardless of flight plan or weather conditions. An ATCT may also provide approach control services (radar or non-radar).

d. Terminal Radar Approach Control (TRACON) Facility. The TRACON is a terminal ATC facility usually located within the vicinity of an airport. The TRACON controls approaching and departing aircraft between 5 and 50 miles of the airport.

e. Automated Flight Service Station (AFSS) and Flight Service Station (FSS). The AFSS and FSS are air traffic facilities providing aviation services such as:

(1) Pilot weather briefing (PWB)

(2) En route communications

(3) VFR search and rescue services

(4) Assistance to lost aircraft and aircraft in emergency situations

(5) Relay of ATC clearances

(6) Pre-flight and in-flight advisory broadcasts, and other services to pilots, via air/ground communications facilities

Selected AFSSs also provide En Route Flight Advisory Services (EFAS) which are specifically designed to exchange timely weather information directly with en route pilots .

**6. Weather Forecast Office (WFO).** WFOs provide direct meteorological support through advice and consultation to the TMU when CWSU meteorologists are not on duty. Other FAA facilities (ATCTs) will be supported directly In Accordance With (IAW) local agreements. WFO support consists of:

a. Providing CWSU and/or AFSS and FSS shift briefings.

b. Assisting the CWSU and ARTCC during in-flight emergencies.

c. Providing ARTCC with forecast services and critical weather updates through the normal suite of aviation products when the CWSU is closed.

NOTE: WFOs Honolulu and Guam provide Pacific Region support equivalent to the Aviation Weather Center (AWC). For their areas of responsibility, WFO Honolulu issues FAs, SIGMETs, and AIRMETs, and WFO Guam issues SIGMETs.

NOTE: Alaska in-flight weather is coordinated and disseminated by the Alaska Aviation Weather Unit (AAWU).

**6.1 CWSU Lines of Authority.** The supporting WFO's MIC is the first line supervisor of the CWSU MIC and is responsible for providing administrative and training support to NWS personnel at the CWSU. The WFO MIC's FAA contact at the ARTCC is the ATM or their designee.

The WFO MIC should ensure all WFO forecasters are aware of CWSU services and have a general knowledge of ARTCC meteorological needs. Forecaster exchanges between WFOs and CWSUs are encouraged. Further, NWS meteorologists are encouraged to visit ARTCCs, ATCTs, TRACONs, and AFSS/FSSs as part of their aviation training.

Open lines of communication must be maintained between FAA facilities and NWS aviation weather support units within the ARTCC's area to ensure timely exchange of necessary weather information. The WFO MIC or their designee will monitor and evaluate the various links between relevant NWS and FAA facilities. Service, product, data, or data exchange deficiencies will be documented and forwarded to the respective NWS Regional Meteorological Services Division (MSD) or their equivalent (known hereafter as regional MSD), as either part of a station evaluation report (with appropriate distribution) or as a separate memorandum with copies to the supervisors of the NWS and FAA facilities or units involved. Initial attempts to remedy deficiencies should be made at the local level. Problems not resolved locally should be brought to the regional or NWS Headquarters (NWSH) level for resolution.

The supporting WFO MIC or their designee will make semi-annual visits to the CWSU. A written report of each visit will be sent to the regional MSD with copies to the CWSU MIC, the ARTCC ATM, and Office of Climate, Water, and Weather Services (OCWWS), NWSH.

**6.1.1 CWSU MIC Responsibilities.** The CWSU MIC is the first line supervisor for assigned CWSU meteorologists. In this position, the CWSU MIC will:

a. Serve as NWS liaison to the supported ARTCC and is responsible for ensuring all CWSU services are provided to the FAA;

b. Have oversight of CWSU service obligations, labor-management relations, meteorological training for CWSU staff, and specified training for ARTCC staff;

c. In agreement with the ARTCC ATM (or a designee with responsibility for CWSU operational oversight), establish CWSU meteorologist duty hours and implement procedures and policies detailed in this instruction and compatible or approved alternate instructions to meet special local requirements.

On occasion, it may be necessary to change or amend the CWSU meteorologist's duty hours. These changes may be requested by the FAA ARTCC ATM or CWSU MIC.

If the request for change is from the local FAA ARTCC ATM, the CWSU MIC will ask for written notice of the proposed changes. The CWSU MIC will coordinate this request with the supporting WFO MIC to determine if resources allow the change in hours. If the CWSU and WFO MICs agree the resources are available, the duty hours will be changed. The CWSU MIC will send a letter detailing all aspects of the duty hours change to the region MSD or their equivalent, who will provide a copy upon request to the Office of Climate, Water, and Weather Services (OCWWS), NWSH.

If the CWSU MIC requests a change in the meteorologist's duty hours, the CWSU MIC will send a letter to the FAA ARTCC ATM and the supporting WFO MIC, explaining why the change is needed. If all parties agree, the hours will be changed. The CWSU MIC will send a letter detailing all aspects of the change in duty hours to the regional MSD, who will provide a copy upon request to OCWWS, NWSH.

**6.1.2 CWSU Meteorologists Responsibilities.** CWSU meteorologists will:

a. Participate in discussions with ATC personnel as required, and with Air Traffic Control System Command Center (ATCSCC) personnel as requested;

b. Issue Center Weather Advisories (CWA) and Meteorological Impact Statements (MIS) as conditions warrant;

c. Provide weather forecasts and briefings for appropriate ATC personnel as required.

d. Solicit pilot reports (PIREPs) through the ATC work force;

e. Relay, as appropriate, reports of conditions meeting specific urgent PIREP criteria to appropriate WFOs and/or the AWC;

f. Relay reports, as time permits, of conditions meeting Severe Weather Warning criteria to the NWS WFO with Local Warning responsibility;

g. Confirm, as time permits, the TMU is aware of the issuance of CWSU products and other pertinent weather information;

h. Provide meteorological forecasts, information and briefings in support of ATC operations during weather-related emergencies;

i. Provide meteorological forecasts and information to pilots in contact with the ARTCC through appropriate ARTCC personnel;

j. Participate in collaborative decision making sessions, such as the AWC's Collaborative Convective Forecast Product (CCFP);

k. Assist in backing up an adjacent CWSU if requested (see Appendix B);

l. Conduct weather training and product familiarization sessions for ARTCC personnel as work load permits.

m. Coordinate aviation forecasts with other NWS offices as necessary.

## 7. CWSU Operations and Products.

**7.1 Priority of Duties.** When insufficient resources impact the CWSU's ability to perform all assigned duties, the CWSU staff will use professional judgment and the CWSU duty priority list in Appendix C, to determine task performance order. A copy of this list will be posted in the CWSU work area.

**7.2 Product Preparation.** CWSUs will issue and disseminate forecasts and products, and conduct briefings as detailed in this and other applicable NWS instructions. Conditions described in these products will generally be restricted to those within the boundaries of ARTCC airspace. Reference points used in CWAs to describe the areal location and extent of these conditions will be the same as those used in SIGMETs/AIRMETs (see NWSI 10-811, International Products), or distances from those points. The Miami CWSU will use the following reference points for CWAs issued for the Bahama Islands: ZBV (Bimini Island), ZFP (Freeport on Grand Bahama Island), ZQA (Nassau on New Providence Island), ZLA (Stella Maris on Long Island), ZIN (Matthew Town on Great Inagua Island), and GTK (Grand Turk Island).

Forecasters should use the minimum number of points needed to describe the area accurately. Points outside of the ARTCC area may be used, but only after appropriate coordination with adjoining CWSUs. Advisories broadcast to aircraft should be kept as brief and concise as possible. All references to distance in the location line of the CWA and MIS products are in nautical miles (NM). The body of the text products will include NM and not statute miles when referring to line and areal width.

In order for CWSU products to be consistent, International Civil Aviation Organization (ICAO) abbreviations and codes will be used in CWSU products. Some ICAO terms have more than one abbreviation or use. One such term of particular interest to CWSU forecasters is vicinity, which can be used as either VC or VCY. Use VC in CWSU products when it is used in conjunction with the following meteorological terms describing conditions in the area of, but not directly at, airfields or aerodromes (i.e., METAR/TAF): DS, SS, FG, FC, SH, PO, BLDU, BLSA, BLSN, and TS (i.e., VCFG, VCTS, etc.). Use VCY in any product describing area coverage of hazards such as icing. Terms used will be consistent with NWSI 10-811. All times will be expressed in Coordinated Universal Time (UTC or Z). The communications header format must be followed exactly if the CWSU product is to be disseminated through the FAA and other communications systems.

Scheduled briefings and products will be developed locally in agreement with the ATM or designee. These briefings should normally be produced and presented as required by the host ARTCC.

All users of CWSU advisories, statements, forecasts, and briefings should be kept aware all CWSU products are not available 24 hours a day. This can be accomplished by adding the remark "NO UPDATES AFT ddttttZ" to the end of products which will be in effect when CWSU duty hours end. The notation "dd" is the day of the month, and "tttt" is the hour and minute in UTC.

**7.3 Communications Headers.** Communications headers for use by the Advanced Weather Interactive Processing System (AWIPS) and World Meteorological Organization (WMO) are added at the NWS Telecommunications Gateway (NWSTG) to ensure appropriate MIS and CWA dissemination. NOTE: The MIS and CWA examples in Appendices D and E, respectively, do not include these headers.

The WMO header format (line 1) for all MISs in the contiguous United States is FOUS31 Kzzz ddtttt. The WMO header format for Alaska MISs is FOUS31 PAZA ddtttt. The AWIPS identifier line for the MIS is CWSzzz, where "zzz" is the ARTCC identifier (e.g., ZOA for Oakland). For example:

FOUS31 KZOA 041421
CWSZOA
or

FOAK31 PAZA 041400
CWSZAN

The WMO header format is WLUS31 Kzzz ddtttt in the contiguous United States, and WLAK31 PAZA ddtttt for Alaska. The AWIPS identifier line for the CWA is CWAzz#, where"zz" is the last two characters of the ARTCC 3-letter identifier (e.g., OA for Oakland) and "#" is the CWA Phenomenon Number (see Section 7.6). For example:

WLUS31 KZME 081300
CWAME1
or

WLAK31 PAZA 150420
CWAAN1

**7.4 Briefings.** A CWSU briefing will be discussion-based, include current and forecast weather conditions expected in the ARTCC operations area during the upcoming shift, and an outlook for the following shift or, if the CWSU is ceasing operations, the overnight hours. Each briefing should contain sufficient information for ATC and TMU managers to make decisions and appropriate operational adjustments based on weather impacts on the NAS.

A shift briefing product (alphanumeric or graphic) should contain a heading with the ARTCC designator (zzz); CWSU BRIEFING; date and time (UTC) issued; and valid date and time (UTC). For example:

ZKC CWSU BRIEFING 141805Z VALID TIL 151100Z

The following information should be included in each briefing when appropriate. Local requirements may determine the order of the items b-g:

a. Advisories in effect at the time of the briefing; e.g., SIGMETs, AIRMETs, airport weather warnings, CWAs, MISs, etc.

b. Synopsis - discussion of weather systems and their movements;

c. An outlook on en route flight conditions, e.g., convective weather, turbulence, icing, volcanic ash, etc.;

d. Terminal weather, i.e., heavy snow, freezing precipitation, low IFR ceiling and/or visibility, and/or operationally significant surface winds, for designated large airports;

e. Wind direction and speed at key flight levels, including jet stream location(s);

f. Freezing level; and

g. Locally required items affecting the ARTCC area of responsibility, e.g., altimeter settings forecast or observed below 29.92 inches or above 31.00 inches.

**7.5 Meteorological Impact Statement (MIS).** A MIS is an unscheduled flow control and flight operations planning forecast. It is a forecast and briefing product for personnel at ARTCC, ATCSCC, TRACONS and ATCTs responsible for making flow control-type decisions. The MIS is valid from 2 to 12 hours after issuance time and details weather conditions expected to adversely impact air traffic flow in the CWSU area of responsibility. They are also valid for conditions existing at the time when CWSU operations begin, if the adverse weather conditions will persist for at least three (3) hours.

A MIS may be tailored to meet the unique requirements of the host ARTCC. These special requirements will be coordinated between the host ARTCC and the CWSU.

A MIS enables ATC facility personnel to include the impact of specific weather conditions in their flow control decision making. Before issuing a MIS, the CWSU meteorologist will ensure forecast conditions triggering the MIS reflect meteorological consistency with other products, such as those issued by the AWC, other national centers, and the WFOs. At a minimum, a MIS should be issued when:

a. Any of the following conditions occur, are forecast to occur, and, if previously forecast, are no longer expected:

(1) Conditions meeting convective SIGMET criteria (see NWSI 10-811)

(2) Icing - moderate or greater

(3) Turbulence - moderate or greater

(4) Heavy precipitation

(5) Freezing precipitation

(6) Conditions at or approaching Low IFR (see NWSI 10-813)

(7) Surface winds/gusts $\geq$30 knots

(8) Low level Wind Shear (surface - 2,000 feet)

(9) Volcanic ash, dust storms, or sandstorms; and

b. In the forecaster's judgment, the conditions listed above, or any others, will adversely impact the flow of air traffic within the ARTCC area of responsibility; and

c. The forecast lead time (the time between issuance and onset of a phenomenon), in the forecaster's judgment, is sufficient to make issuance of a CWA unnecessary or premature.

MIS phenomena forecasts should use the location reference point identifiers depicted on the In-Flight Advisory Plotting Chart, and include the height, extent, and movement of the conditions. MIS product issuances will be numbered sequentially beginning at Midnight local time each day. The MIS is disseminated and stored as a "replaceable" product. Therefore, each issuance will contain the details of all pertinent known conditions meeting MIS issuance criteria, including ongoing conditions described in previously issued MISs.

The MIS will be distributed to ARTCC personnel (see Appendix D for MIS format and examples), including TMU personnel, and disseminated via FAA and NWS communications systems. If a MIS is included in, or issued concurrently with a CWSU briefing, the meteorologist should ensure the MIS portion of the briefing is disseminated to those supported facilities which do not normally receive the CWSU briefing. While alphanumeric MIS products will continue to be issued, electronic graphic versions of MISs may be developed and used to augment or provide quick reference to ARTCC users. Graphic MISs, at a minimum, will depict all hazards or expected hazards with clearly defined boundaries. They will also show all of the associated information covered in the alphanumeric text, a valid period date/time group, and map backgrounds, as required by the local ARTCC.

If the MIS is distributed over the FAA Flight Data Entry Printout (FDEP) system, the system's message size restriction of 10 lines should be considered. If the FDEP line limit will be exceeded, then meteorologists may revise an already disseminated product for FDEP-only use.

**7.6 Center Weather Advisory (CWA).** The CWA is an aviation weather warning for conditions meeting or approaching national in-flight advisory (AIRMET, SIGMET or SIGMET for convection) criteria (see NWSI 10-811). The CWA is primarily used by air crews to anticipate and avoid adverse weather conditions in the en route and terminal environments. It is not a flight planning product because of its short lead time and duration. Additionally, the CWA should be meteorologically consistent with other products and reflect conditions at the time of issuance and/or in the near future. If a CWA has been issued prior to coordination, notification to the appropriate offices, national center, or WFO will follow as soon as higher priority duties permit.

CWAs will be valid for up to two (2) hours and may include forecasts of conditions expected to begin within two (2) hours of issuance. If conditions are expected to persist after the advisory's

valid period, a statement to that effect should be included in the last line of the text. Additional CWAs will subsequently be issued as appropriate. Notice of significant changes in the phenomenon described in a CWA will be provided by a new CWA issuance for that phenomenon. If the forecaster deems it necessary, CWAs may be issued hourly for convective activity. This may improve the usefulness of the Hazardous In-flight Weather Advisory Service (HIWAS) recordings which include those CWAs.

The Urgent CWA (UCWA) communications header is intended for those situations where unforecast weather conditions occur and have an immediate effect on the safe flow of air traffic within the ARTCC area of responsibility. It should only be used when the CWSU meteorologist believes any delay in dissemination to FAA facilities would impact aviation safety. Use the routine CWA header for subsequent issuances of the same phenomenon. CWAs may be issued for the same phenomena described in advisories and forecast products issued by WFOs, the AWC, or the National Centers for Environmental Prediction (NCEP).

There are four (4) situations in which a CWA should be issued:

1. When existing or anticipated weather conditions do not meet national in-flight advisory criteria (i.e., in terms of intensity or areal coverage) but current PIREPs or other weather information sources indicate those conditions, in the judgment of the CWSU meteorologist, will adversely impact the safe flow of air traffic within the ARTCC area of responsibility.

2. As a supplement to an existing in-flight advisory. The issuance of a CWA in this circumstance should be limited to occasions when, in the judgment of the CWSU meteorologist, a redefining statement or update, in advance of a new national advisory, is adequately supported by real-time information. The purpose of the CWA in this case is to improve upon or update the existing advisory's description of the phenomenon. These improvements may be to make the location more relevant to users within the ARTCC area or to be more precise in describing the location, movement, extent, or intensity of the phenomenon. For example, a CWA describing the specific area(s) of low IFR conditions within the ARTCC area would be a valid redefinition of the location and intensity relative to the ARTCC area and meeting documented requirements.

3. When an in-flight advisory has not been issued, but observed or expected weather conditions meet in-flight advisory criteria (based on current PIREPs and/or other sources of information). The CWSU meteorologist should call the appropriate forecaster at the AWC, AAWU, or WFOs Honolulu and Guam to coordinate. If CWSU meteorologist believes it is necessary to issue a CWA to allow lead time while the national in-flight advisory is being prepared, a UCWA will be issued indicating an AIRMET or SIGMET will be issued shortly.

4. To cancel a CWA when the phenomenon described in the CWA is no longer expected. Use the next higher number in sequence and ensure the valid time is at least 30 minutes in length.

The first line of each CWA's FAA communications system header will have an ARTCC identifier immediately followed by a Phenomenon Number (1-6) (see Appendix E for CWA format and examples). The Phenomenon Number will be assigned to each meteorologically distinct condition, group of conditions, or to each set of similar condition(s) in distinctly separate areas. The first meteorological event of the local calendar day which requires the issuance of a CWA will be assigned phenomenon number 1. The latest CWA issuance with this number can replace and update the previous issuance. This numbering makes it possible to disseminate CWAs for up to six (6) unrelated events with each event issuance capable of being individually updated.

The first line will also contain an issuance/beginning valid time. When a CWA is issued with some lead time, the time entered is the issuance time. The time the meteorologist expects the conditions to begin should be stated in the text. If there is no lead time, the issuance time is considered the beginning time of the phenomena. In either case, CWAs are valid upon issuance.

On the second line, the product identifier CWA will be followed by a three-digit number. The first digit is the phenomenon number; the second two digits are an issuance number. Issuance numbers for phenomena will be issued sequentially beginning with 01. This will be followed by the VALID TIL time. The valid period (issuance time to end time) will not exceed two (2) hours. If the meteorological conditions are expected to persist after the two (2) hour period, append a remark at the end of the advisory text, and on subsequent CWAs when appropriate stating conditions will extend past valid time (e.g. CONDS EXP TO CONT AFT 20Z).

Time permitting, any CWA overlapping into another center's airspace should be coordinated and a statement should be included in the text, e.g., SEE ZOB CWA 201 FOR TS CONDS IN ZOB CTA (CTA is control area). If issuance prior to coordination is necessary, a statement regarding the area(s) affected should be included in the text, e.g., LINE TS EXTDS NW INTO ZOB CTA.

AIRMETs/SIGMETs being augmented by the CWA will be referenced in a text remark, e.g. SEE CONVECTIVE SIGMET 8W. Each CWA will normally be disseminated via FAA and NWS communications systems. A hard copy of each CWA will be given to the TMU for dissemination to affected ARTCC sectors and terminal facilities and for broadcast on the appropriate radio frequencies. Issuance times will be logged on the daily CWSU operations log sheet. If the TMU can receive and disseminate the CWA electronically, then delivering hard copies of the CWA to ARTCC sectors may not be needed.

Graphic versions of CWAs may be created to augment the disseminated text versions and provide quick reference to product users within the ARTCC. Graphic CWAs will depict, as a minimum, all hazards detailed in the text, with hazard boundaries clearly defined, appropriate descriptive alphanumeric text, date and time group, and map backgrounds as required by the local ARTCC. Forecasters should be aware that if the CWA is to be distributed over the FAA FDEP system, that system has a product length restriction.

**7.7 Forecast Coordination.** Forecast products issued by WFOs, AWC, AAWU, other NCEP centers, and CWSUs often address the same spatial and temporal events. CWSU

meteorologists should strive to ensure forecasts, advisories, or information they provide are consistent with other forecast products, whether those products are issued locally or by other NWS offices. Coordination with responsible NWS offices prior to product issuances is important and necessary, especially when those products concern unexpected or suddenly changing observed weather conditions. This coordination prevents or minimizes confusion to end users impacting aviation safety. In the interest of preserving forecast consistency, the responsible agency's decision on the forecast product is considered final. There is one exception, as follows:

CWSU meteorologists routinely provide TMU decision-makers with TRACON-area weather briefings. The TRACON area briefing typically contains high resolution details on weather conditions expected to occur within a 25 nautical mile radius of a terminal.

CWSU personnel should coordinate with personnel at the appropriate WFOs to avoid significant discrepancies between their TRACON area weather briefings and the affected TAFs. However, since the TRACON briefing and affected TAF can involve different spatial and time resolution, differences between the two can occur.

At a minimum, the CWSU meteorologist should coordinate with the WFO aviation forecaster when the portion of the TRACON area briefing describing terminal weather (conditions within five nm of the terminal) contradicts the affected TAF at a level requiring an amendment to the TAF (See NWSI 10-813, Terminal Aerodrome Forecasts). This coordination should be accomplished as soon as the CWSU forecaster becomes aware a current, or anticipated, TRACON area weather briefing differs from the TAF and that difference requires a TAF amendment.

Such coordination should not delay the delivery of the TRACON area weather briefing if, in the judgment of the CWSU meteorologist, a delay would cause significant impact to air traffic flow and/or compromise safety. In such a case, coordination should occur as soon as possible after the delivery of the briefing.

Occurrences when CWSU/WFO coordination fails to produce a common forecast solution should be documented on the CWSU operations log. In any case, the CWSU meteorologist is the final authority for the TRACON area weather briefing and the WFO forecaster is the final authority for the TAF.

When there are repeated significant forecast differences between the CWSU TRACON area weather briefing and a TAF, the MICs of the CWSU and the WFO(s) should coordinate to resolve the problem.

**7.8 Dissemination of CWSU Products.** PIREPs generated by the CWSU will be relayed nationally, within the ARTCC, and to supported FAA facilities in the most prompt and efficient manner. More information on PIREPs is available in NWSI 10-804, Pilot Reports.

**7.9 Support to Enroute Flight Advisory Services (EFAS) and Automated Flight Service Stations/Flight Service Stations (AFSS/FSS).** The CWSU in each ARTCC is designated the

primary support facility for each associated EFAS facility. CWSUs (and WFOs when CWSUs are closed) should assist the EFAS specialist to the best of their ability. Exchange of weather information can be helpful to both parties since the EFAS staff has access to additional sources of PIREP information.

Shift briefings for AFSS/FSS personnel should normally be done by the CWSU IAW FAA Order 7110.10. Weather support when the CWSU is closed or not available (unless back-up services are in effect) is the responsibility of designated WFOs IAW FAA Order 7110.10. This responsibility ensures the link with an NWS facility able to provide 24-hour support remains clear cut. Any requests for CWSU PWBs will be referred to an AFSS/FSS.

**7.10 Handling of Weather Records.** CWSU weather records and daily operations logs will be retained as directed by this instruction. Electronically displayed products generated on AWIPS or any other computerized system will not be printed solely for retention purposes. Worksheets used to update briefings or to supplement other products need not be retained. If the FAA ARTCC requires the CWSU daily operations log or its equivalent be turned over to the FAA as part of a facility record, the CWSU will make a copy of the log to meet NWS retention purposes.

**7.10.1 Retention.** Texts of written weather briefings and hard copy graphic records, and copies of the Daily Record of Facility Operation Log (FAA Form 7230-4) or its equivalent prepared by the CWSU will be retained for 30 days at the CWSU. After 30 days, copies of all these records will be retained for 5 years at either the CWSU or supporting WFO.

**7.10.2 Protection of CWSU Records**. All requests for copies of weather exhibits or written records prepared by CWSU meteorologists will be handled IAW NWSI 10-2003. In the event of an aircraft mishap or accident within the ARTCC's area of responsibility, retention procedures described above will be followed unless otherwise requested by the Manager, Forensic Services, Office of Climate, Water, and Weather Services, NWSH. In the event of a major accident, all relevant products prepared by CWSU meteorologists, including available observations, charts, and forecasts, should be forwarded to the appropriate WFO as soon as possible. These records will be protected and retained in the WFO for at least 30 days, allowing time to determine:

a. To what extent weather was a factor, and/or

b. What weather information will be required for investigation purposes.

After 30 days, normal retention procedures will be followed unless the Manager, Forensic Services requests otherwise.

**7.11 Statements.** No written statements by CWSU meteorologists concerning a system incident, or an aircraft incident or accident, will be provided to offices, agencies, organizations, or individuals (government or public) outside of the NWS without the approval of the Manager, Forensic Services, NWSH. Any written statement will concern only the meteorological facts and must be reviewed by the appropriate NWS Regional Headquarters (RH) and the Manager, Forensic Services, NWSH. When a written statement is prepared, the original and one copy will

be forwarded directly to the Manager, Forensic Services. One copy will be forwarded to the appropriate NWS RH MSD or their equivalent through the supporting WFO.

The comments of CWSU meteorologists are not a matter of public record. There is no requirement anyone not part of a government investigation team be allowed to question or interview personnel in connection with an aircraft accident, whether in person or over the phone. When an accident has occurred and the details are being discussed by persons outside of the NWS, or when being questioned or interviewed in connection with an accident, NWS personnel should make every effort to ensure their verbal comments are not being recorded. If a request to record such comments is made, the request will be referred to the Manager, Forensic Services. Any arrangements will be made at RH or NWSH.

**7.12 Back-Up of CWSU Operations.** On occasion, a CWSU may be closed for all or part of their duty day. When this happens, back-up of the CWSU will be accomplished IAW Appendix B.

## Appendix A - CWSU Support Facility Locations

| CWSU | | Supporting NWS WFO |
|---|---|---|
| ZAB | Albuquerque Center | WFO Albuquerque, NM |
| ZAN | Anchorage Center | WFO Anchorage, AK |
| ZTL | Atlanta Center | WFO Peachtree, GA |
| ZBW | Boston Center | WFO Boston/Taunton, MA |
| ZAU | Chicago Center | WFO Chicago, IL |
| ZOB | Cleveland Center | WFO Cleveland, OH |
| ZDV | Denver Center | WFO Denver-Boulder, CO |
| ZFW | Fort Worth Center | WFO Fort Worth, TX |
| ZHU | Houston Center | WFO Houston/Galveston, TX |
| ZID | Indianapolis Center | WFO Indianapolis, IN |
| ZJX | Jacksonville Center | WFO Jacksonville, FL |
| ZKC | Kansas City Center | WFO Kansas City/Pleasant Hill, MO |
| ZLA | Los Angeles Center | WFO Los Angeles/Oxnard, CA |
| ZME | Memphis Center | WFO Memphis, TN |
| ZMA | Miami Center | WFO Miami-South Florida, FL |
| ZMP | Minneapolis Center | WFO Chanhassen, MN |
| ZNY | New York Center | WFO Brookhaven, NY |
| ZOA | Oakland Center | WFO San Francisco Bay Area/Monterey, CA |
| ZLC | Salt Lake City Center | WFO Salt Lake City, UT |
| ZSE | Seattle Center | WFO Seattle, WA |
| ZDC | Washington Center | WFO Baltimore/Washington Sterling, VA |

# Appendix B - Back-Up of CWSU Operations

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**1. General.** Because there is no operational back-up support from ATCSCC to CWSUs, the following plan will be used in the event a CWSU is closed:

a. During normal CWSU off-duty hours (usually from 10 PM to 5 AM local time), the AWC in Kansas City, upon request, advice and consultation with the ATCSCC, will provide weather support to the ARTCCs. ATCSCC will then pass information along to the ARTCCs. AWC will not issue CWAs and cannot be expected to perform the duties of the CWSU.

b. During CWSU duty hours (normally from 5 AM to 10 PM local time), if a CWSU is non-operational (either unstaffed or for other reasons), for all or part of that time, the adjacent CWSU will provide, if able to do so, back-up CWAs and other support (if necessary) to FAA facilities such as TRACON, ATCTs, and FSS.

**NOTE: If the back-up CWSU is being impacted by weather such that support to the affected CWSU's FAA-supported facilities would cause undue hardship, then support to these facilities will be on an as-requested basis. Such occurrences should be logged with the reason(s) for not providing support.**

Service will return to normal when the affected CWSU is back in operation and does not need back-up. MISs will not be included in the back-up services except as noted in the notification procedures (see example). MISs contain different criteria for each CWSU in addition to what is listed as the MIS content in Section 7.5. Therefore, it must be emphasized that the CWSU providing back-up will not be able to provide the same range of services that the affected CWSU provided to its ARTCC.

Information exchanges will be necessary between CWSU pairs. This information should include support requirement information about the operational and meteorological differences between the CWSUs should back-up become necessary. Information should be shared as to the type and extent of back-up which is to be provided.

The AWC and each CWSU will be provided with a phone list of each ARTCC Watch Officer, CWSU, and AFSS by OCWWS, NWSH. For ATCSCC operations, the point of contact is the National Operations Manager (NOM): 703-708-5100.

**2. Notification Procedures.** When the CWSU determines it will be unstaffed or non-operational, the CWSU will inform its back-up CWSU, the ARTCC Area Manager, supporting WFO, NWS Region MSD, and the AWC forecaster for the region in which the CWSU resides, i.e. FA East, FA Central, FA West, or AAWU. If time permits, the back-up CWSU should call the ATCSCC NOM when they have assumed responsibility for the affected CWSU.

If the back-up CWSU is unavailable for support, the affected CWSU will call the AWC lead forecaster. The AWC will support the closed CWSU with its own products, except for the CWA and MIS. No support to other air traffic facilities in the closed CWSU's operational area will be given or expected in this case. NOTE: This occurrence should also be logged with a reason for the backup not being available.

The WFO can be considered as a resource for the ARTCC in the event the CWSU is not in operation. The WFO cannot provide all the services of a CWSU. The WFO can answer questions about the TAF and weather affecting its local terminal as workload permits. The closing CWSU should issue a MIS specifying which CWSU has backup responsibility, any expected MIS criteria weather, the closing time, and reopening time (if known).

**3. MIS Examples for Back-Up Operations:**

ZMP MIS 02 VALID 161800-170200
...FOR ATC PLANNING PURPOSES ONLY...
ZKC CWSU HAS ASSUMED ZMP CWSU OPERATIONS
TIL 170200Z.

ZDV MIS 01 VALID 211200-220000
...FOR ATC PLANNING PURPOSES ONLY...
ZAB CWSU HAS ASSUMED ZDV CWSU OPERATIONS
TIL FURTHER NOTICE.

**4. CWSU Back-Up Pairings:**

| ARTCC | SITE | BACK-UP FACILITY |
|---|---|---|
| ZAB | Albuquerque, NM | ZDV |
| ZAN | Anchorage, AK | AAWU |
| ZTL | Atlanta, GA | ZME |
| ZBW | Nashua, NH | ZOB |
| ZAU | Aurora, IL | ZID |
| ZDV | Longmont, CO | ZAB |
| ZFW | Fort Worth, TX | ZHU |
| ZHU | Houston, TX | ZFW |
| ZOB | Oberlin, OH | ZBW |
| ZID | Indianapolis, IN | ZAU |
| ZJX | Jacksonville, FL | ZMA |
| ZKC | Olathe, KS | ZMP |
| ZLA | Palmdale, CA | ZOA |
| ZME | Memphis, TN | ZTL |
| ZMA | Miami, FL | ZJX |
| ZMP | Minneapolis, MN | ZKC |
| ZNY | Ronkonkoma, NY | ZDC |
| ZOA | Fremont, CA | ZLA |
| ZLC | Salt Lake City, UT | ZSE |
| ZSE | Auburn, WA | ZLC |
| ZDC | Leesburg, VA | ZNY |
| | | |

This chart is reversible, e.g. ZME backs up ZTL and vice versa, except for ZAN and the AAWU.

ARTCC Watch Desk Phone List

| ARTCC | WATCH DESK PHONE NUMBER | |
|---|---|---|
| | | |
| ZAB - Albuquerque, NM | 505-856-4500 | |
| ZAN - Anchorage, AK | 907-269-1103 | |
| ZTL - Atlanta, GA | 770-210-7622 | |
| ZBW - Nashua, NH | 603-879-6655 | |
| ZAU - Aurora, IL | 630-906-8240 | Alternate: 630-906-8241 |
| ZDV - Longmont, CO | 303-651-4248 | |
| ZFW - Fort Worth, TX | 817-858-7503 | |
| ZHU - Houston, TX | 281-230-5560 | Alternate: 281-230-5577 |
| ZOB - Oberlin, OH | 440-774-0426 | |
| ZID - Indianapolis, IN | 317-247-2238 | Alternate: 317-247-2222 |
| ZJX - Jacksonville, FL | 904-549-1537 | Alternate: 904-549-1543 |
| ZKC - Olathe, KS | 913-254-8500 | |
| ZLA - Palmdale, CA | 661-265-8205 | |
| ZME - Memphis, TN | 901-368-8234 | |
| ZMA - Miami, FL | 305-716-1588 | |
| ZMP - Minneapolis, MN | 651-463-5580 | |
| ZNY - Ronkonkoma, NY | 631-468-1080 | |
| ZOA - Fremont, CA | 510-745-3331 | Alternate: 510-745-3332 |
| ZLC - Salt Lake City, UT | 801-320-2560 | |
| ZSE - Auburn, WA | 206-351-3520 | |
| ZDC - Leesburg, VA | 703-771-3470 | |
| | | |

## Appendix C - CWSU Duty Priorities

CENTER WEATHER SERVICE UNIT PRIORITY OF DUTIES

1. Provide weather consultation to ARTCC personnel assisting in a weather related emergency.

2. Prepare Center Weather Advisories (CWA).

* 3. Ensure dissemination of CWAs, SIGMETs, International SIGMETs, and AIRMETs within the ARTCC

* 4. Disseminate PIREPs meeting urgent criteria within the ARTCC.

5. Ensure expeditious dissemination of Urgent PIREPs to, and coordinate forecasts with AWC and other appropriate NWS facilities

6. Prepare scheduled briefings.

7. Deliver scheduled briefing for assembled ARTCC personnel.

8. Deliver scheduled briefing to dispersed ARTCC personnel and/or designated EFAS, ATCT, and TRACON personnel as required.

9. Prepare Meteorological Impact Statements (MIS).

* 10. Ensure dissemination of MISs within the ARTCC.

* 11. Solicit/gather/disseminate PIREPs or other weather intelligence.

12. Prepare locally specified displays of time-critical weather conditions with or affecting the ARTCC area of responsibility.

13. Participate in national and local Collaborative Decision Making sessions.

* The TMU specialists will have primary responsibility for these duties.

## Appendix D - MIS Format and Examples

**1. MIS Format.** The FAA header line is zzz MIS ii VALID ddtttt-ddtttt; where "zzz" is the ARTCC identification, (e.g., ZJX), "MIS" is the product type, "ii" is the 2-digit sequential issuance number, and "ddtttt" is the valid beginning and ending date/time UTC. The second sentence of the MIS will be "FOR ATC PLANNING PURPOSES ONLY".

Any remarks such as "SEE CONVECTIVE SIGMET 8W"; "NO UPDATES AVBL AFT 0230Z"; and Forecaster initials and/or facility identifier may be placed at the end of the MIS.

If the phenomenon described in a MIS is no longer expected, a cancellation MIS message will be issued. The FAA header will not contain an issuance number. However, the MIS text will begin with "Cancel zzz MIS ii." A text explanation for the cancellation should follow. If the phenomenon described in the MIS is expected to continue beyond the operating hours of the CWSU, then the remark "NO UPDATES AFT ttttZ" (where "ttttZ" is the UTC closing time of the CWSU) will be added at the text end.

**a. MIS Examples:**

ZOA MIS 01 VALID 041415-041900
...FOR ATC PLANNING PURPOSES ONLY...
FOR SFO BAY AREA
BR/FG WITH CEILING BLW 005 AND VIS OCNL BLW 1SM.
ZOA CWSU

ZOA MIS 02 VALID 041650
...FOR ATC PLANNING PURPOSES ONLY...
FOR SFO BAY AREA
CNL ZOA MIS 01. CONDS HAVE IMPRD.
ZOA CWSU

ZID MIS 03 VALID 041200-142330
...FOR ATC PLANNING PURPOSES ONLY...
FROM IND TO 17WSW APE TO LOZ TO 13NE PXV TO IND
TIL 21Z MOD TURB FL310-390 DUE TO JTST WS.
ZID W OF A LINE FM FWA TO BWG
AFT 18Z OCNL SEV TSGR TOPS TO FL450. MOV FM 24035KT. MAX SFC WINDS 60KT.
ZID E OF A LINE FM FWA TO 35SE BKW
MOD MXD ICE IN CLDS/PRECIPITATION 020-120. CONDS ENDING W OF A 40S CLE TO 20NE BKW LINE BY 19Z.
ZID CWSU

## Appendix E - CWA Format and Examples

**1. <u>CWA Format</u>:**

a. Line one of FAA header:

zzzp (U) CWA ddtttt (Note: () = optional)

b. Line two of FAA header:

zzz CWA pii VALID TIL ddtttt, where header elements are:

| | |
|---|---|
| zzz | ARTCC Identification, e.g., ZKC |
| p | Phenomenon Number (single digit, 1-6) |
| (U)CWA | Product Type (note: UCWA is only used on line one of the header) |
| ddtttt | Beginning and/or issuance UTC date/time |
| ii | Issuance Number (issued sequentially for each Phenomenon Number) |
| ddtttt | Ending valid UTC date/time |

c. Line one of text - Phenomenon Location

| | |
|---|---|
| FROM aaa TO bbb TO ccc TO aaa | Polygons |
| FROM aaa TO bbb | Lines |
| VCY aaa | Vicinity |
| aaa | Point |
| nnnDDD aaa | Point |

Notes:

(1) The location line should not exceed one line of text and must end **without** a period.

(2) aaa, bbb, etc. are location identifiers depicted on the in-flight advisory plotting chart. These identifiers will be used as area or line-defining points, or as all or part of a point reference (i.e., VCY (n)nn DD(D) XXX). The (n)nn is distance in nautical miles and DD(D) is a 16-point compass direction (e.g., VCY IAH or 40NNE LBB).

(3) Polygon areas are defined with the keyword FROM and followed by 3 or more points starting in the northernmost corner of the areas, proceeding clockwise, and ending by repeating the first point.

(4) The text for a line phenomenon must contain the keywords LINE and nn NM WIDE where nn is the width of the line in nautical miles. Describe a line from north to south and west to east using as many points as necessary to indicate any changes in line orientation.

(5) The text for a phenomenon defined around a point must contain the keywords AREA or ISOL. The diameter of a point phenomenon, i.e., DIAM nn NM must also be specified.

(6) If some or all of a CWA phenomenon is outside of the points depicted on the in-flight advisory plotting chart, then describe the location by using latitude, longitude, or plain language geographic location.

Line two of text - phenomenon description: Text description will include key phrases detailed in the notes above. Remarks, if appropriate, will be added to the end of the text.
Note: The forecaster may choose to include initials, facility identifier, or the forecaster number at the end of the CWA.

**2. CWA Examples:**

ZME1 CWA 081300
ZME CWA 101 VALID TIL 081500
FROM MEM TO JAN TO LIT TO MEM
OCNL TS MOV FM 26025KT. TOPS TO FL450.

ZFW2 CWA 131945
ZFW CWA 203 VALID TIL 132145
FROM LBB TO MAF
DEVELOPING LINE TS 15 NM WIDE MOV FM 31020KT. TOPS TO FL500.

ZLC3 CWA 271600
ZLC CWA 302 VALID TIL 271800
FROM DTA TO BCE
LINE TS 25 NM WIDE MOV FM 27010KT. TOPS ABV FL400.

ZLC3 CWA 271645
ZLC CWA 303 VALID TIL 271745
CNL CWA 302.
SEE CONVECTIVE SIGMET 8W.

ZME1 CWA 040100
ZME CWA 101 VALID TIL 040300
VCY MEM
SEV CLA ICE BLW 020 DUE TO FZRA. NUMEROUS ACFT REP RAPID ACCUMULATION OF ICE DRG DES TO MEM. NO ICE REPS ABV 020. CONDS CONTG AFT 03Z. NO UPDATES AFT 040200Z.

ZNY5 UCWA 021400
ZNY CWA 502 VALID TIL 021600
FROM BGM TO 18WNW JFK TO HAR TO SLT TO BGM
NUMEROUS ACFT REP SEV TURB AND WS BLW 020.
CONDS EXTD NE INTO ZBW CTA. CONDS EXP TO CONT AFT 16Z.

ZNY4 UCWA 041500
ZNY CWA 401 VALID TIL 041700
40N SLT TO 18WNW JFK
DEVELOPING LINE TS 25 NM WIDE MOV 24020KT. TOPS ABV FL350.
LINE TS EXTDS NW INTO ZOB CTA.

ZLA1 CWA 160400
ZLA CWA 101 VALID TIL 160600
35ENE LAX
NUMEROUS ACFT REP LOW LVL WS BLW 005. SFC WIND GUSTS 50KT. VIS OCNL 1SM BLDU BLSA. CONDS EXP TO CONT AFT 06Z. NO UPDATES AFT 160500Z.

ZHU2 UCWA 031955
ZHU CWA 205 VALID TIL 032155
45N IAH
ISOL SEV TSGR DIAMETER 10 NM MOV FM 33025KT. TOP FL550

ZAN1 UCWA 150420
ZAN UCWA 101 VALID TIL 150620
KAMCHATKA PENINSULA RUSSIA (N5611/E16047)
MT KLYUCHEVSKOY (15500 FT) 0145Z ERUPTION VISIBLE TO FL260.
ASH OBS MOV SE BTN 0300-0330Z. SEVERAL PIREPS INDICATED ASH ALONG JR580 NEAR AND W OF OPAKE (N53/E170). FL340-360 WINDS 240070. ASH EXP TO X JET ROUTES IN VCY OF ADAK AND CONT MOV E AND NE.